

Directions:

Evaluate the student by entering the appropriate number to indicate the degree of competency.

Rating Scale (0-6):

- 0 No Exposure** – no experience/knowledge in this area; program/course did not provide instruction in this area
- 1 Unsuccessful Attempt** – unable to meet knowledge or performance criteria and/or required significant assistance
- 2 Partial Demonstration** – met some of the knowledge or performance criteria with or without minor assistance
- 3 Knowledge Demonstrated** – met knowledge criteria without assistance at least once
- 4 Performance Demonstrated** – met performance criteria without assistance at least once
- 5 Repetitive Demonstration** – met performance and/or knowledge criteria without assistance on multiple occasions
- 6 Mastered** – successfully applied knowledge or skills in this area to solve related problems independently

NOTE:

* = Essential competencies (essential for the first day on the job).

NOTE: Skill standards were coordinated nationally by V-TECS; see accompanying performance indicator document for more information.

0	1	2	3	4	5	6	A. Safety	Nat'l Standards
							*1. Identify types, purposes, and operation of fire extinguishers	
							*2. Inspect shop for hazards	
							*3. Work cautiously and safely, using appropriate tools	
							*4. Demonstrate victim removal procedures from an electrical conductor	
							*5. Demonstrate safe handling of refrigerants	
							*6. Demonstrate safe handling of pressurized gases	
							*7. Demonstrate safe handling of combustibles	
							*8. Apply MSDS (Material Safety Data Sheet) information to material use	
							*9. Adhere to applicable local, state, and federal regulations (EPA[environmental], DOT [moving vehicle] and OSHA [worker safety])	A3-A5
							*10. Demonstrate first aid for occupational hazards	
							Other:	

0	1	2	3	4	5	6	B. Refrigeration Principles and Practices	
							*1. Explain principles of refrigeration	
							*2. Explain heat transfer theory	
							*3. Identify refrigerant and oil types, characteristics and uses	
							*4. Use gauge manifold set	
							*5. Leak-test system	E10
							*6. Evacuate and measure vacuum level to 500 microns	E11

								*7. Recover refrigerants	E12
								*8. Charge system to manufacturer's specifications	E13
								*9. Describe the operation of refrigeration system accessories (e.g., receivers, accumulators, filter/dryer, sight glasses, valves, etc.)	E9
								Other:	

0	1	2	3	4	5	6	C. Piping Principles and Practices	
							*1. Identify different types of tubing and fittings	
							*2. Perform copper tubing operations, including cutting, flaring, soldering, brazing, bending, swaging, etc.	H4
							*3. Install, repair, and replace aluminum tubing	
							*4. Install and replace PVC tubing and pipe	H6
							*5. Perform gas pipe operations (cutting, reaming, threading, and connecting)	H5
							Other:	

0	1	2	3	4	5	6	D. Basic Electricity	Nat'l Standards
							*1. Apply the principles of alternating and direct current	B1
							*2. Differentiate between common single- and three-phase voltage systems, including 240V, 60Hz, single-phase; 208V, 60Hz, three-phase; 240V, 60Hz, three-phase; and 480V, 60Hz, three-phase systems	B2
							*3. Read and interpret voltage, ampere, ohm, and watt meters	B5
							*4. Read and interpret electrical schematic and wiring diagrams	B6
							*5. Install electrical power and control circuits	B15
							*6. Apply the principles and relationship of Ohm's law as it applies to series, parallel, and series-parallel circuits	B4
							*7. Apply the principles of electrical circuit protection, including fuses, circuit breakers, disconnect switches, and grounds	B10
							Other:	

0	1	2	3	4	5	6	E. Electric Motors	
							*1. Apply the operating principles of electric motors	C1
							*2. Recognize the application of various types of electric motors	C2
							*3. Recognize the application of various types of capacitors	C3
							*4. Test capacitors	
							*5. Explain the principles and operation of electric motor protective devices	C4

								*6. Interpret electric motor specifications (e.g., horsepower, voltage, etc.)	C5
								*7. Install and connect electric motors	C6
								Other:	

0	1	2	3	4	5	6	F. Controls	
							*1. Apply the principles of safety and operating control devices (e.g. pressure switches, thermostats, etc.)	D1
							*2. Apply the principles of electromechanical control devices (e.g., relays, contractors, magnetic starters, timers, sequences, etc.)	D2
							*3. Apply the principles of electronic control devices (e.g., ignition modules, electronic timers, etc.)	D3
							*4. Apply the principles of safety and control circuits	D4
							5. Install/ service mechanical control devices (e.g., pneumatic and water controls)	D5
							6. Install/service electromechanical control devices	D6
							*7. Install/replace transformers	
							Other:	

0	1	2	3	4	5	6	G. Residential/Light Commercial Cooling/Heating	
							*1. Install or replace compressor	
							*2. Install or replace condensing unit	
							3. Repair or replace condenser	
							*4. Repair or replace evaporator	
							*5. Replace, repair, and adjust metering devices	E7
							*6. Perform cleanup of a contaminated system	
							*7. Describe operation of a heat pump	K1
							*8. Start and check residential heating and cooling systems	
							9. Measure and adjust conditioned air flow	G2
							10. Repair, replace, and service electronic air cleaner	J16
							*11. Pump down unit	
							Other:	

0	1	2	3	4	5	6	H. Installation and Preventive Maintenance	
							*1. Perform preventive maintenance on air-conditioning systems	
							*2. Perform preventive maintenance on heating systems	

								*3. Perform preventive maintenance on heat pumps	
								4. Design air-distribution system	G5
								5. Fabricate, insulate, and install air-distribution systems	J6
								6. Size and assemble vents	I14
								Other:	

0	1	2	3	4	5	6	I. Troubleshooting	Nat'l Standards
							1. Troubleshoot mechanical control devices	D7
							2. Troubleshoot electromechanical devices	D8
							3. Troubleshoot electronic control devices	D9
							4. Analyze compressor operation—electrical and mechanical	E5, E15
							5. Analyze and replace a four-way reversing valve	
							6. Troubleshoot electric motors	C8
							7. Troubleshoot natural gas fired heating systems	I16
							8. Troubleshoot LP-fired heating systems	I16
							9. Troubleshoot electric heating systems	
							10. Troubleshoot heat pumps	K11
							11. Troubleshoot oil-fired heating systems	I17
							12. Troubleshoot air-conditioning systems	J13
							Other:	

0	1	2	3	4	5	6	J. Customer Relations	
							*1. Explain operation of the system's thermostat	
							*2. Communicate system operation in lay terms	
							Other:	

0	1	2	3	4	5	6	K. Leadership Competencies**	
							1. Demonstrate an understanding of VICA, its structure and activities	
							2. Demonstrate an understanding of one's personal values	
							3. Perform tasks related to effective personal management skills	
							4. Demonstrate interpersonal skills	
							5. Demonstrate etiquette and courtesy	
							6. Demonstrate effectiveness in oral and written communication	

								7. Develop and maintain a code of professional ethics	
								8. Maintain a good professional appearance	
								9. Perform basic tasks related to securing and terminating employment	
								10. Perform basic parliamentary procedures in a group meeting	
								Other:	

****NOTE: These competencies are addressed in the Missouri SkillsUSA-VICA Curriculum Guide lessons.**

0	1	2	3	4	5	6	Areas of Specialization
							1.
							2.
							3.
							4.
							5.
							6.
							7.
							8.
							9.
							10.